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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,882	03/26/2004	Anthony J. Kowal	PAN-214J	1088

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EXAMINER

PRETLOW, DEMETRIUS R

ART UNIT PAPER NUMBER

2863

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/810,882	Applicant(s) KOWAL ET AL.	
	Examiner Demetrius R. Pretlow	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213:

Disposition of Claims

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-75 is/are allowed.
- 6) ☒ Claim(s) 22, 24, 32-33, 37, 39, 40 is/are rejected.
- 7) ☒ Claim(s) 1-21, 23, 25-31, 34-36, 38 and 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/21/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because it contains more than 150 words. Correction is required. See MPEP § 608.01(b).

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the in claim 1, the power regulating circuit **including a power management subsystem** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 1 is objected to because of the following informalities: In claim 1, line 16 the power regulating circuit **including a power management subsystem** is not shown in the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 22 is rejected under 35 U.S.C. 102(e) as being anticipated by Schaffer et al. (US 2005/0137812). Given the broadest reasonable interpretation in reference to claim 22, (Schaffer et al. teach current of the power supply, however it is known that the current is directly related to voltage) Schaffer et al. teach a loop power supply for supplying a supply voltage (current). Note Schaffer et al. Note paragraph 38, lines 2-3

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and Figure 1. Schaffer et al. teach a load (flowmeter Note Figure 1) powered by a load voltage and including at least a processor (13) for calculating a flow rate (Note paragraph, 40, lines 5-7), an ultrasonic transducer (3) power circuit (inherent), and an ultrasonic transducer (3) receiving circuit (transducers act as transmitters and receivers Note paragraph 39, lines 1-5); Schaffer teach a power regulating circuit (17 power management clamps)between the loop power supply and the load; Note paragraph 52, lines 2-3. Schaffer et al. teach a power management subsystem configured to detect the load voltage and to reduce the power consumption at least one predetermined set point. Note paragraph 52, lines 1-10. (the current is directly related to the voltage).

In reference to claim 24, Schaffer et al. teach the loop power supply is a 4-20 mA loop power supply. Note paragraph 7, lines 11-13.

In reference to claim 32, Schaffer et al. does not explicitly teach the power management subsystem includes a low level power management section, however Schaffer et al. teach the power management system 17 is designed for storing energy during times of low power consumption and resupplying the stored energy during times of high power consumption which suggests some managing low level power.

In reference to claim 33, Schaffer et al. teach section includes at least a first voltage detector (inherent) configured to compare the load voltage with a first set point voltage and to output a first warning signal to the processor when the load voltage is less the first set point voltage. Note paragraph 52, lines 7-10. The voltage detector would be inherent to Schaffer et al. because there must be something to detect the

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voltage and some type of indication signal (warning) to warrant making the stored energy available to the power management system. Note paragraph 52, lines 7-10.

In reference to claim 37, does not explicitly teach the power management subsystem includes a high level power management section, however Schaffer et al. teach the power management system 17 is designed for storing energy during times of low power consumption and resupplying the stored energy during times of high power consumption which suggests some managing high level power.

In reference to claim 39, Schaffer et al. teach the transducers connected to the load. Note paragraph 38, lines 4-5.

In reference to claim 40, Schaffer et al. teach each transducer includes a composite piezoelectric element. Note paragraph 38, lines 5-6.

In reference to claim 42, Schaffer et al. teach a battery for powering the loop power supply. Note paragraph 6, line 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaffer et al. (US 2005/0137812) in view of Kishimoto et al. (US 6,928,369). Schaffer et al. teach the limitations above.

Schaffer et al. does not teach a flow meter including one or more solar cells for powering the loop power supply.

Kishimoto et al. teach a flow meter including one or more solar cells for powering the loop power supply. Note column 22, lines 12-14.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the teaching of Schaffer et al. to include the teaching of Kishimoto et al. because it would the device to operate in the event of a power loss.

Claims 1-21 would be allowed if the formal matters above are overcome and because of the inclusion of the limitations of an a power converter responsive to the supply voltage to vary the load voltage in response to a control signal, a safe storage device between the power converter and the load for storing power when not needed by the load and for delivering power to the load when required by the load, and a control subsystem for providing the control signal to the converter based on the setting of the loop power supply by the load; and a power management subsystem configured to detect the load voltage and to reduce the load power consumption at least one predetermined set point.. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

In reference to claims 23, 25-31 the prior art of record does not teach the inclusion of the limitations of an a power converter responsive to the supply voltage to vary the load voltage in response to a control signal; a safe storage device for storing power when not needed by the load and for delivering power to the load when needed

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by the load; and a control subsystem for providing the control signal to the converter based on the setting of the loop power supply by the load. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record.

In reference to claims 34-36 the prior art of record does not teach the inclusion of the limitations of in which the processor is programmed to initiate a first power reduction instruction set in response to the first warning signal to reduce the load voltage.. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record.

The primary reason for the allowance of claims 38 is the inclusion of the limitations of an which the high level power management section is configured to measure the power draw of selected modules of the load and to implement a rules set to regulate the operation of the modules based on the power draw of each module. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

In reference to claim 41 the prior art of record does not teach the inclusion of the limitations of in which the composite piezoelectric element includes an array of cells isolated from each other by channels filled with potting material. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record.

Allowable Subject Matter

Claims 44-75 are allowed.

The best prior art of record particularly Schaffer et al. (US 2005/0137812), teach
A low power ultrasonic flowmeter to be powered by a two wire power supply loop
is described, comprising: an ultrasonic flow sensor (1, 27), a signal processing unit (13)
for determining a measurement result based on measurements performed by the
ultrasonic flow sensor (1, 27), an input/output unit (15) to be connected to the two wire
loop, for controlling a current of the power supplied to represent the measurement
result, for receiving power form the power supply loop, and a power management
system (17), for an energy efficient distribution of the power supplied to the flowmeter
via the input/output unit (15), comprising storage means (21, 23) for storing energy
during times of low power consumption and resupplying the stored energy during times
of high power consumption.

The primary reason for the allowance of claims 44-65 is the inclusion of the
limitations of a power regulating circuit between the loop power supply and the load, the
power regulating circuit including'. a power converter responsive to the supply voltage to
vary the load voltage in response to a control signal, a safe storage device for storing
power when not needed by the load and for delivering power to the load when required
by the load, and a control subsystem for providing the control signal to the converter
based on the setting of the loop power supply by the load. It is these limitations found in
each of the claims, as they are **claimed in the combination**, that has not been found,

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taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 66-75 is the inclusion of the method steps of adjusting the control signal based on the setting of the loop power supply; detecting the load voltage; and reducing the load voltage at a predetermined set point. It is these steps found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Demetrius R. Pretlow whose telephone number is (571) 272-2278. The examiner can normally be reached on Mon.-Fri. 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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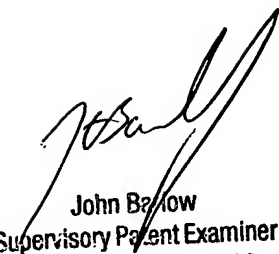
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Demetrius R. Pretlow

Demetrius Pretlow

9/19/05

Patent Examiner


John Barlow
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Technology Center 2800